

Claims

- [c1] 1. A gas cylinder assembly for use in a welding-type device comprising:
 - a gas cylinder having (a) a neck portion, (b) a base portion, and (c) a body portion enclosing a cavity and constructed to receive a gas therein, the gas cylinder configured to be enclosed in a welding-type device;
 - a valve disposed about the neck portion and operatively separating the cavity from atmosphere, the valve operably engageable by a regulator constructed to allow flow of the gas therethrough.
- [c2] 2. The gas cylinder assembly of claim 1 wherein the gas cylinder is disposable.
- [c3] 3. The gas cylinder assembly of claim 1 wherein the gas cylinder is refillable.
- [c4] 4. The gas cylinder assembly of claim 1 wherein the regulator is constructed to be contained within the welding-type device.
- [c5] 5. The gas cylinder assembly of claim 1 further comprising an adapter disposed between the regulator and the gas cylinder.

- [c6] 6.The gas cylinder assembly of claim 5 wherein the adapter further comprises a first end threadingly connected to the neck portion of the gas cylinder and a second end threadingly connected to the regulator.
- [c7] 7.The gas cylinder assembly of claim 6 wherein the first end of the adapter has a nipple disposed within a recess, the nipple constructed to engage the valve of the gas cylinder.
- [c8] 8.The gas cylinder assembly of claim 6 wherein the first end has a female thread orientation and the second end has a male thread orientation.
- [c9] 9.The gas cylinder assembly of claim 5 wherein the adapter has an uninterrupted passage therethrough.
- [c10] 10.The gas cylinder assembly of claim 5 wherein the adapter has a first opening constructed to engage the gas cylinder, a second opening constructed to engage the regulator, and a third opening constructed to engage a pressure gauge.
- [c11] 11.The gas cylinder assembly of claim 10 having uninterrupted fluid communication between the first, second, and third openings.
- [c12] 12.The gas cylinder assembly of claim 1 wherein the

regulator further comprises a bidirectional valve constructed to be in fluid communication with another gas cylinder.

- [c13] 13. The gas cylinder assembly of claim 1 further comprising a pressure gauge connected between the valve and the regulator.
- [c14] 14. An adaptor for a shielding gas system of a welding-type device comprising:
 - a body extending between a first end constructed to be connected to a gas cylinder and a second end constructed to be connected to a regulator;
 - a passage extending through the body and fluidly connecting the first end and the second end;
 - a recess formed in the first end;
 - a nipple extending from the body into the recess and constructed to operatively engage a valve of the gas cylinder.
- [c15] 15. The adaptor of claim 14 further comprising an opening fluidly connected to the passage and constructed to engage a pressure gauge.
- [c16] 16. The adaptor of claim 14 further comprising a threading formed about a periphery of the recess.
- [c17] 17. The adaptor of claim 14 wherein the nipple is ap-

proximately centered in the recess.

- [c18] 18.The adaptor of claim 14 wherein the passage is offset from a longitudinal axis of the body.
- [c19] 19.The adaptor of claim 14 further comprising a threading formed about the second end.
- [c20] 20.The adaptor of claim 14 incorporated into a welding-type device having a housing enclosing the adaptor and gas cylinder therein.
- [c21] 21.A shielding gas system for a welding-type device comprising:
 - a gas cylinder;
 - a valve connected to the gas cylinder and biased to a closed position;
 - a coupler constructed to bias the valve open when the coupler is connected to the gas cylinder.
- [c22] 22.The shielding gas system of claim 21 wherein the coupler further comprises a threaded recess constructed to engage the gas cylinder and a projection in the threaded recess constructed to bias the valve.
- [c23] 23.The shielding gas system of claim 21 wherein a portion of the valve moves in a direction opposite a direction of movement of the gas cylinder as the coupler is

connected thereto.

- [c24] 24. The shielding gas system of claim 21 wherein the gas cylinder has a first end having an opening formed therein and the valve is positioned within the opening and does not extend beyond the first end.
- [c25] 25. The shielding gas system of claim 21 further comprising a regulator connected to the coupler generally opposite the gas cylinder.
- [c26] 26. The shielding gas system of claim 21 further comprising a pressure gauge attached to the coupler between the regulator and coupler.
- [c27] 27. The shielding gas system of claim 21 wherein the coupler has an unobstructed passage therethrough.
- [c28] 28. The shielding gas system of claim 21 incorporated into a welding-type device having a housing enclosing the shielding gas system.
- [c29] 29. A shielding gas system for a welding device comprising:
 - a gas bottle having a first end having an opening and a second closed end;
 - a body extending from the first end to the second closed end;

a valve disposed in the opening of the first end; and an adapter constructed to automatically open the valve when connected about the first end.

- [c30] 30. The shielding gas system of claim 29 wherein the adapter has a first end connectable to the gas bottle and a second end connectable to a regulator.
- [c31] 31. The shielding gas system of claim 30 wherein the adapter has an opening generally transverse to the first end and the second, the opening constructed to engage a pressure gauge.
- [c32] 32. The shielding gas system of claim 29 wherein the gas bottle is constructed to be filled one time.
- [c33] 33. The shielding gas system of claim 29 wherein the gas bottle is refillable.
- [c34] 34. The shielding gas system of claim 29 wherein the gas bottle has a length that is less than an outer dimension of the welding apparatus.
- [c35] 35. The shielding gas system of claim 30 wherein the regulator further comprises a bidirectional valve to allow another gas bottle to be fluidly connected thereto.
- [c36] 36. The shielding gas system of claim 29 having an outer diameter of less than approximately twelve inches.

- [c37] 37.The shielding gas system of claim 29 wherein the valve is moveable along an axis of gas bottle.
- [c38] 38.The shielding gas system of claim 29 wherein the gas bottle is positioned entirely within a housing of the welding apparatus and in fluid communication with a torch.
- [c39] 39.A welding device comprising:
 - a housing enclosing a power source constructed to supply a welding power;
 - a gas cylinder attached to the housing and constructed to provide a shielding gas; and
 - wherein the gas cylinder has a length that is less than a length of a side of the housing.
- [c40] 40.The welding device of claim 39 further comprising a regulator attached to the gas cylinder and operable through the housing.
- [c41] 41.The welding device of claim 39 wherein the gas cylinder is disposable.
- [c42] 42.The welding device of claim 39 wherein the gas cylinder is refillable.
- [c43] 43.The welding device of claim 39 further comprising a shroud positioned in the housing and having a recess

constructed to receive the gas cylinder therein.

- [c44] 44. The welding device of claim 43 further comprising a strap constructed to straddle the gas cylinder having a first end pivotably connected to the shroud and a second end removably connectable to the shroud.
- [c45] 45. The welding device of claim 43 wherein the shroud further comprises a second recess connected to the first recess and constructed to snugly receive an adaptor body therein.
- [c46] 46. The welding device of claim 45 wherein the adapter has a threaded recess constructed to engage the gas cylinder and a nipple disposed within the recess.
- [c47] 47. The welding device of claim 46 wherein the nipple operably engages a valve integral to the gas cylinder as the adapter is moved relative to the gas cylinder.
- [c48] 48. The welding device of claim 45 further comprising a third recess connected to the second recess opposite the first recess and constructed to snugly receive a regulator therein.
- [c49] 49. A method of providing shielding gas to a weld comprising:
initiating a welding arc; and

opening a shielding gas path to a gas system and providing shielding gas immediately upon connection of a gas source to a welding-type device.

- [c50] 50. The method of claim 49 further comprising closing the gas source by separating the gas source and the welding-type device.
- [c51] 51. A welding-type device comprising:
 - means for generating a welding power;
 - means for providing shielding gas to a weld; and
 - means for fluidly connecting the means for providing shielding gas and the means for generating welding power upon connection of the means for providing shielding gas and the means for generating welding power.
- [c52] 52. The welding-type device of claim 51 further comprising enclosing the means for generating a welding power and the means for providing shielding gas in an enclosure.